



## Early Journal Content on JSTOR, Free to Anyone in the World

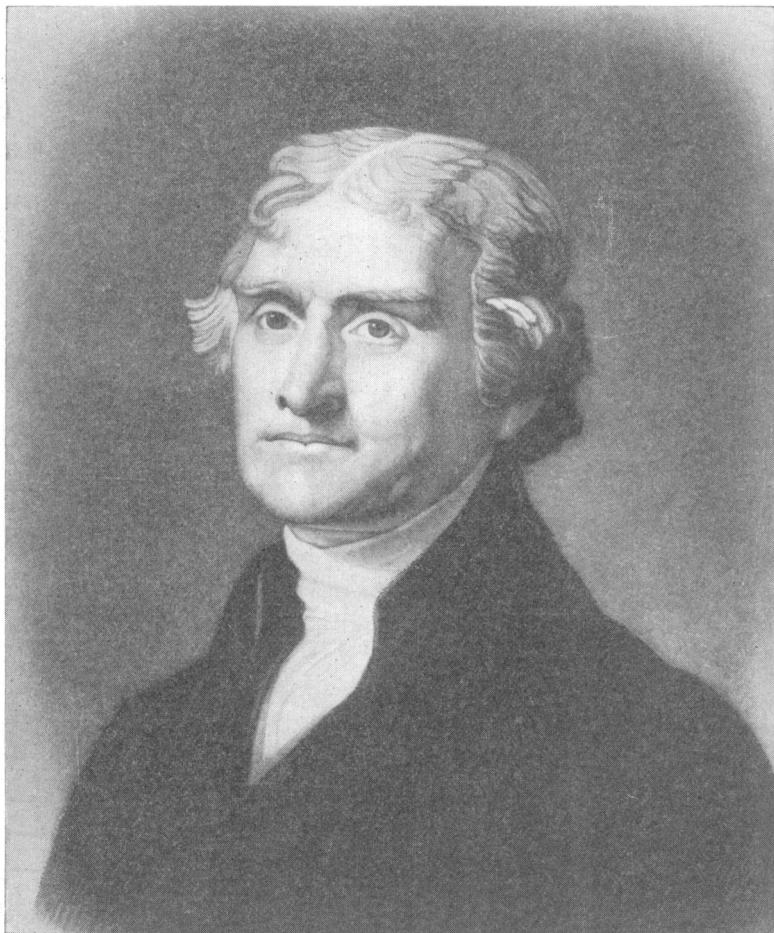
This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.



THOMAS JEFFERSON.

## THOMAS JEFFERSON IN RELATION TO BOTANY

BY RODNEY H. TRUE

WE are all familiar with Thomas Jefferson, the writer of the Declaration of Independence and the first great American radical leader, but we are less familiar with the fact that amid the political tempests which raged around him he never ceased to live the life of an ardent lover of the world of living things. In the volumes of his correspondence there appear not only letters dealing with the momentous questions of national life, neutrality, peace or war, slavery or no slavery, government by the people or only government for the people, but also many to men of science dealing with the various questions that agitated their world a hundred years ago. Systems of classification, identity of doubtful plants, problems of the cultivator in field and green-house, the introduction of new and useful kinds, and the best apportionment of time to be given to the several sciences found in the college curriculum are among the subjects of consideration both with American and with European correspondents. Jefferson was interested in all *useful* branches of science, and since his conception of utility was very broad, few lines of research that had developed in his day failed to receive some attention from this tireless man. The name of our great scientist-statesman, Benjamin Franklin, will occur to all minds in this connection. Undoubtedly Franklin's work on electricity was one of the greatest achievements yet credited to America. It is doubtful, however, whether he was in touch with so wide a range of scientific interests as was Jefferson.

Before we undertake a more detailed consideration of Jefferson's relations to botany, let us try to put him in his botanical setting by recalling some of the chief landmarks set up in that science during the years of his long life. Born in 1743, Jefferson as a four-year-old boy might have known Dillenius at the time of his death. He was six years old when Mark Catesby, the author of the famous "History of Carolina, etc.," passed away. He was two years old when Gronovius published Clayton's "Flora of Virginia." The chief botanical figures of the period covered by Jefferson's youth were Jussieu, the eldest; Philip Miller, of the "Gardener's Dictionary"; Peter Collinson, the witty English Quaker botanist and correspondent of Linnæus; John Bartram, of Philadelphia, likewise a Quaker; Dr. Alexander Garden, of Charleston, and the great Linnæus himself. That this youth knew nothing at this time of these men is most probable. Although destined in a few

short years to write the immortal Declaration, then revolutionary doctrine, that nations and peoples have a right to freedom of development, he was now oblivious of the fact that Linnæus was engrossing the attention of the world of science by inaugurating his peaceful revolution in classification and nomenclature. He was much more concerned with the smiles and frowns of Miss Sukey Potter and her friend, Miss Belinda Burwell. As he entered young manhood, among the prominent figures of earlier days now passing from the stage were some familiar to us: Cadwallader Colden, the botanizing governor of the New York colony died in the year of the Declaration of Independence, Bernard de Jussieu and John Bartram one year later, Linnæus two years later, and his pupil, the Swedish botanical explorer, Peter Kalm, three years later.

Among those who were boys with Jefferson were Humphrey Marshall, one of that famous group of Philadelphia Quaker naturalists who left his mark on American botany in his little book entitled "Arbustum Americanum"; Adam Kuhn, the first professor of botany in the College of Philadelphia, and perhaps in the whole country; André Michaux, the elder of that pair of French travelers and naturalists who added so largely to the botanical knowledge of America, and lastly, Laurent de Jussieu, through whose work chiefly the so-called Natural System of Classification found form and currency.

In Jefferson's first administration (1801-1805), Dr. Benjamin S. Barton, of Philadelphia, published his "Elements of Botany," the first great American botanical text-book, and Dr. David Hosack established near New York his Elgin botanical garden, later attached to Columbia College.

In the years immediately following Jefferson's retirement from the presidency appeared Barton's "Flora Virginica" (in part), F. A. Michaux's "History of the Forest Trees of North America," Pursh's "Flora Americae Septentrionalis," and Mühlenberg's "Catalogue," which a few years later was brought on to the basis of the Natural System by the versatile diplomat, Abbé Corrêa, the Portuguese Minister to the United States. This same period witnessed the remarkable advance in chemistry marked by the discovery of oxygen by Priestly, from whom Jefferson received many letters. The work of Ingenhauss, of Vienna, and that of DeSaussure and of Senebier at Geneva developed the basal facts concerning the gaseous interchanges taking place in respiration and photosynthesis in plants. Thomas A. Knight, the pioneer in physiology and plant breeding, and Sir Humphry Davy, the great chemist and physicist, lived their most active days concurrently with Jefferson—also that "scourge of the human race," Napoleon. Jefferson's death took place in 1826, the year of the appearance of Darlington's "Florula Cestrica." It will bring Jefferson nearer to us to recall that in that year Asa Gray, whom the older of us here present this evening might

have known and studied with, was already a boy of sixteen, while his distinguished associate, Dr. John Torrey, was a young man of thirty years.

Having now established Jefferson's location in botanical chronology, let us turn to the man himself and, during the time remaining to us, examine his relations to our science and its progress during his time. It seems clear, from the evidence at hand, that, interested as he was in all lines of progress, Jefferson felt himself especially attracted to botany. Indeed, he may have come by such a leaning honestly enough through his mother, Jane Randolph. She was the daughter of Isham Randolph of Goochland county, Virginia, whose interest in plants was known in his lifetime beyond the bounds of the American colonies.

Peter Collinson, the English Quaker botanist, commemorated by Linnæus in the generic name, *Collinsonia*, wrote in February, 1739, to his friend, John Bartram, the Quaker botanist of Philadelphia, who was about to undertake a tour of scientific investigation into Virginia:

Then when thee proceeds home, I know no person who will make thee more welcome than Isham Randolph. He lives thirty or forty miles above the falls of the James River, in Goochland—above the other settlements. Now I take his house to be a very suitable place to make a settlement at—for to take several days' excursions all around, and to return to his house at night.

His further advice to Friend Bartram is hardly botanical in its subject matter, but since it sheds light on Jefferson's grandfather and on his way of living in that remote frontier settlement, I may perhaps be permitted to quote a few lines further.

One thing I must desire of thee, and do insist that thee oblige me therein; that thou make up that drugged clothes, to go to Virginia in, and not appear to disgrace thyself or me; for though I should not esteem thee the less, to come to me in what dress thou will,—yet these Virginians are a very gentle, well-dressed people—and look, perhaps, more at a man's outside than his inside. For these and other reasons, pray go very clean, neat, and handsomely dressed to Virginia. Never mind thy clothes, I will send more another year."

He met Isham and found him all that Collinson had promised. Moreover, Bartram found Isham able to guide him to an interesting conifer which Bartram later pronounced "much the finest *Arborvitæ*, surpassing one he had obtained from Cadwallader Colden from Hudson's River."

However it came about, by inheritance or otherwise, we may be assured that Jefferson's interest in botany was unusually keen. Writing in November, 1808, to his son-in-law, Colonel Thomas Mann Randolph, concerning the education of his grandson, Thomas Jefferson, then President at Washington, says:

For a scientific man in town nothing can furnish so convenient an amusement as chemistry, because it can be pursued in his cabinet; but for a country gentleman, I know no source of amusement and health equal to botany and

natural history; and I should think it unfortunate for such an one to attach himself to chemistry, altho' the general principles of the science it is certainly well to understand.

In a letter written October 7, 1814, to Dr. Thomas Cooper of Columbia, S. C., in which university courses are the subject of discussion, Jefferson claims for botany a high rank among the practical sciences, since it deals with the sources of food, fibers and other important products, among which he mentions ornamentals. Botany as a humanizing influence again finds its office recognized.

No country gentleman should be without what amuses every step he takes into his fields.

The interest taken by Jefferson in the study of plants seems to have been shared by several of his plantation-owning neighbors. Indeed, the circumstances surrounding the Virginia planter before the coming to life of the slavery issue were probably as favorable to the development of the accomplishments and graces as have ever existed. Large interests close at hand, supervised by his own eye, an abundant living and few distractions beyond those incident to the hospitalities of the times gave the possessor the leisure needed for the cultivation of such interests as might commend themselves to him. It is then hardly surprising that in a region shown by Bartram and others to be so rich in new and interesting plants there should be a marked activity in the study of botany among the men of leisure living there.

It is probable that Jefferson's early interest in the subject may have been such an amateur interest intensified by his inheritance of some of the tendencies seen in Isham Randolph. It seems to have been characteristic of Jefferson that when his interest in a subject was really aroused he went into the matter as far as circumstances would permit. In his desire to have the necessary resources at hand, the available book markets were ransacked. Like the true collector, he was not satisfied to borrow a book, he must needs own it, then lend it generously to others and perhaps lose it. A single letter may suffice to illustrate one of these characteristics. It was written in January, 1783, at Philadelphia, where Jefferson was Washington's Secretary of State, to Mr. Francis Eppes, a neighboring planter and father of his future son-in-law. Mr. Eppes, acting as Jefferson's emissary, was trying to get a much-desired book from his neighbor, Mr. Bolling. After writing about Gibraltar and affairs at the British court Jefferson says:

Since I came here there has been sold the Westover copy of Catesby's History of Carolina. It was held near a twelve month at twelve guineas, and at last sold for ten. This seems to fix what should be given for Mr. Bolling's copy, if you can induce him to let you have it, which I am anxious for.

It is not known what success Mr. Eppes had with Mr. Bolling, but among the remarkable collection of books which Jefferson made and which in 1815 became the nucleus of the present Library of Congress,

there was a copy of Catesby. His botanical library became in time one of the best in America, a fact attested by the frequent loan of rare volumes to students of plants not so fortunate as to own copies themselves.

Remarkable as was the breadth and intensity of Jefferson's interests in affairs, he was not the author of many books. The service demanded of him by state and country with little intermission from his election to the House of Burgesses of the Colony of Virginia in 1769 to his retirement from the Presidency forty years later, gave him at no time the continuous leisure required for doing any large body of original investigation. We find, therefore, outside of the myriad references more or less extended to matters of science (and botany in particular) preserved in his very voluminous correspondence, but one extended work, a book appearing first under date of 1782, entitled "Notes on Virginia." And that book became one through no deliberate intention on the part of Jefferson to be an author on this subject. His friend, the French representative to America, M. de Marbois, wishing information for friends in Europe, begged Jefferson to set down answers to a series of questions dealing with the main points of interest and importance concerning his native state. In response to this request, Jefferson wrote down rapidly and without great research the series of chapters which eventually became the book mentioned. These chapters dealt more completely and scientifically with Virginia than any previous work had done with any of the sister states and has been referred to by General Greely as the first great American contribution to scientific geography. The book ran through many editions in English, and through several in a very inaccurate French version published without Jefferson's knowledge or consent. A German edition also appeared.

Probably this book represents the first important contribution made by Jefferson to biological science and serves as a landmark in his career. The chapter dealing with the flora of the state gives lists of medicinal, esculent, ornamental and otherwise useful native plants. The common names as well as the Linnaean names were used. Not finding the pecan described in Miller, Linnaeus or Clayton, he says, "Were I to venture to describe this, speaking of the fruit from memory, and of the leaf from plants of two years' growth, I should specify *Juglans alba*, *foliolis lanceolatis, acuminatis, serratis, tomentosis, fructa minore, ovato, compresso, vix insculpto, dulci, putamine tenerrime*," (which translated says this: *Juglans alba*, with leaflets lanceolate, acuminate, serrate, tomentose, fruit small, ovate, compressed, little sculptured, sweet, shell thin.) "It grows on the Illinois, Wabash, Ohio and Mississippi." This description was written in 1781 or early in 1782 and appeared in print in Paris in 1784, one year before Humphrey Marshall described the pecan in his "Arbustum Americanum," the work in which the

nomenclatorial history of this tree is considered by some to have had its beginning.

In order to contrast the botanical workmanship of Jefferson with that of Marshall, I will read the description in the "Arbustum Americanum" p. 69, on which Marshall has received credit for first introducing the pecan to science:

*S. Juglans* pecan. The Pecan or Illinois Hickory.

This tree is said to grow plenty in the neighborhood of the Illinois River, and other parts to the Westward. The young trees raised from these nuts, much resemble our young Pig-nut Hickories. The nuts are small and thin shelled.

To my mind Marshall's description fails to distinguish the pecan plant from the pig-nut hickory he mentions, while the name proposed by him is left so nearly nude that its title to priority is doubtful. The earlier, clean-cut, adequate diagnosis by Jefferson, can only on bibliographic technicality fail to secure for him the credit of being the first scientific sponsor for the pecan.

As a matter of fact, the pecan had been known to several American botanists almost twenty-five years before either of these books appeared. Colonel Bouquet obtained them at Pittsburgh and gave them to John Bartram, who seems to have sent them to several of his correspondents. Peter Collinson and John St. Clair almost certainly received some in 1760 or 1761. Since at that time Jefferson was still at the Belinda Burwell-Sukey Potter stage, he could hardly have been interested in the interchange of letters between John Bartram and Peter Collinson produced by Colonel Bouquet's "seven hard, stony seeds shaped something like an acorn." It seems probable that Collinson showed these puzzling nuts to his friend, James Gordon, a prominent nurseryman living near London, whom the generic name of the Loblolly bay, *Gordonia*, commemorates. The result amuses Peter, who writes to his friend John:

I do laugh at Gordon, for he guesses them to be a species of Hickory.

Then he continues, this time in the vein of true prophesy.

Perhaps I may be laughed at in turn, for I think they may be what I wish, seeds of the Bondue tree, (Kentucky coffee tree), which thou picked up in thy rambles on the Ohio.

Characteristically enough, Jefferson throughout his correspondence which turned not rarely on this nut; consistently refers to it as the paccan or Illinois nut. In France where he represented the United States in a diplomatic capacity, we find him enthusiastically introducing it to the Frenchmen. Writing from Paris on January 3, 1786, to his Philadelphia friend, Francis Hopkinson, the early American song writer and signer of the Declaration of Independence, after indicating a number of errands to be done for him, Jefferson says,

The third commission is more distant. It is to procure me two or three hundred paccan-nuts from the Western country. I expect they can always be

got at Pittsburg, and am in hopes, that by yourself or your friends, some attentive person there may be engaged to send them to you.

He continues with characteristic explicitness:

They should come as fresh as possible, and come best, I believe, in a box of sand.

Nearly a year elapses before he hears from Hopkinson who evidently is not clear that he has obtained the right thing and Jefferson replies to him from Paris, December 23, 1786. "The paccan nut is, as you conjecture, the Illinois nut. The former is the vulgar name south of the Potomac, as also with the Indians and Spaniards, and enters also into the botanical name, which is *Juglans paccan*." Here it will be noted he adopts Marshall's proposed name.

During the years spent in Paris, Jefferson was at the very heart of European activity and in the lack of newspapers he served as a reporter on the progress of science for some of his American friends as well as for Harvard, Yale, and perhaps other institutions. Among those to whom he frequently wrote on subjects of this nature was his good friend Bishop James Madison, the President of William and Mary College, at Williamsburg, Va. A letter written by him on July 19, 1788, at Paris will show how well Jefferson played the part of scientific scout for America.

You know also that Dr. Ingenhauss had discovered, as he supposed, from experiment, that vegetation might be promoted by occasioning streams of the electrical fluid to pass through a plant, and that other physicians had received and confirmed this theory. He now, however, retracts it, and finds by more decisive experiments, that the electrical fluid can neither retard nor forward vegetation. Uncorrected still of the rage of drawing general conclusions from partial and equivocal observations, he hazards the opinion that *light* promotes vegetation. I have heretofore supposed from observation, that light affects the color of living bodies, whether vegetable or animal; but that either the one or the other receives nutriment from that fluid must be permitted to be doubted of, till better confirmed by observation.

The state of physics at that time is keenly illuminated by his remarks on light as a fluid like electricity. How inadequate the view before the conceptions of energetics entered is shown by the remark concerning the non-nutritiousness of the light fluid.

Jefferson closes this letter with a little rather debatable philosophy growing out of this ill fortune of the efforts of Ingenhauss.

It is always better to have no ideas than false ones; to believe nothing, than to believe what is wrong. In my mind, theories are more easily demolished than rebuilt.

Fortunately for Thomas Jefferson and for us, he was never able to rigidly follow this creed of skepticism. Of the truth of his observation on the perishability of theories we can all bear him witness.

It may be of interest to note in passing that last year I found among the remains of Jefferson's library now in the Library of Congress a copy of Ingenhauss's book entitled "Experiments on Vegetables."

In 1791 in company with his plant-loving friend Madison, Jefferson

had occasion to take an extended turn through the Northern States. This opened to their eyes a new flora as seen in the first week of June. Jefferson writes enthusiastically to his son-in-law, and fellow lover of plants, Thomas Mann Randolph:

BENNINGTON IN VERMONT, June 5, 1791.

Dear Sir: Mr. Madison and myself are so far on the tour we had projected.

After describing the battlefield of Saratoga he continues:

We have also visited Forts William, Henry and George, Ticonderoga, Crown Point, etc., which have been scenes of blood from a very early part of history—We were more pleased, however, with the botanical objects which continually presented themselves. Those either unknown or rare in Virginia, were the sugar maple in vast abundance, the silver fir, white pine, pitch pine, spruce pine, a shrub with decumbent stems, which they call juniper, an azalea very different from the nudiflora, with very large clusters of flowers, more thickly set on the branches, of a deeper red and high pink-fragrance. It is the richest shrub I have seen. The honeysuckle of the gardens growing wild on the banks of Lake George, the paper birch, an aspen with a velvet leaf, a shrub-willow with downy catkins, a wild gooseberry, a wild cherry with single fruit (not the bunch cherry), strawberries in abundance.

The azalea here referred to with such enthusiasm, was in the opinion of Mr. W. W. Eggleston, probably *A. canescens*, first normally described twelve years later in 1803 by Michaux the elder. Had Jefferson taken the trouble to give his observations the form of conventional descriptions, it is quite likely that his discoveries would have added several plants then new to science.

During the next decade, that preceding his first presidency, Jefferson found his time very largely occupied with the duties involved in the positions of Secretary of State, under Washington, and Vice-president with John Adams, but incidentally he serves as President of the American Philosophical Society, he writes an essay on the study of Anglo-Saxon, he drafts the famous Kentucky resolutions, makes preliminary plans for an educational institution which in the later years of his life became the University of Virginia, and prepares a parliamentary manual, still in very general use in legislative assemblies. During this period he was the recognized leader of the newly formed Republican party and as such was involved in what was perhaps the most bitter partisan contest ever waged in our political history.

During this period there are many incidental proofs of his continued pleasure in botany as when on April 1, 1892, at Mrs. Trist's desire he sends to Benjamin Hawkins

about a dozen beans of three different kinds, having first taken toll of them as she has done before. They are of the scarlet flowering kind. This is all I know of them. The most beautiful bean in the world is the Caracalla bean, which though in England a greenhouse plant, will grow in the open air in Virginia and Carolina. I could never get one of these in my life. They are worthy your enquiry.

On June 2, 1793, writing from Philadelphia, he does a good turn for his friend John by writing to James Madison:

Bartram is exceedingly anxious to get a large supply of seeds of the Kentucky coffee tree. I told him I would use all my interest with you to obtain it, as I think I heard you say some neighbors of yours had a large number of trees. Be so good as to take measures for bringing a good quantity, if possible, to Bartram when you come to Congress.

During his stay in Paris from 1784 to 1789, Jefferson had made the acquaintance of many men of science, and his reputation brought him many correspondence-acquaintances. When, therefore, the French Revolution, later became European chaos through the deeds of Napoleon, many men of science found little opportunity to pursue their studies. Jefferson received letters from several of these friends who desired a quiet haven in America. The University of Geneva, with Edinburgh, declared by Jefferson to be the "eyes of Europe" was involved in the general disaster. Washington, having received a present from Virginia in the shape of some shares in the Potomac and James River Companies, desired to place them where in some far-reaching way they might work for the public good, and before bestowing them sought Jefferson's advice. With a boldness which was characteristic of him when great opportunities were in sight, Jefferson proposed to Washington the transfer bodily of the University of Geneva to some place near the Federal city (Washington) where it should become the beginning of the National University of America. He proposed the organization of a professorship in agriculture which should present this branch in a series of lectures. The University was not transferred and Jefferson's glorious dream faded. One can not but ponder what such a transfer would have meant to America. The germ of the most important work in plant physiology lay in two members of that faculty. Through the epoch-making work of Theodor de Saussure and of Jean Senebier, aided by their above condemned Austrian colleague Ingenhauss, the foundations for the understanding of the processes of photosynthesis and respiration were laid. At the time this bold conception captured Jefferson these men were approaching their prime, only a few years later to dazzle the world of science with their brilliant achievements. Had that work been performed at the new National University of America situated near the Federal city one of the great ideals of Jefferson's life would have been realized.

The relation of Jefferson to science and botany in particular up to the time of his first presidency had been essentially that of a keenly interested and very intelligent amateur. He had been an intermediary between scientists, had on several occasions expressed his own views on current scientific problems and in some cases had anticipated the specialists themselves.

In 1802, however, the greatest scientific opportunity of his life came to Jefferson with the purchase of Louisiana. At this time there came under the flag of the United States a vast unknown area for exploration and settlement. The Missouri River with St. Louis as a starting point had for years been a highway into that country swarming with

herds of bison and antelope and peopled with war-like but interesting Indian tribes. Fur traders and their like had brought back such information as was to be had about the country. The fascination of this great unknown wilderness had long before taken possession of Jefferson. While a resident in Paris he had become acquainted with John Ledyard, one of those nomads who roamed the world in search of adventure. Ledyard had been with Captain Cook in his famous voyage through Behring Straits and was with him on his last fatal visit to the Sandwich Islands. He came to Paris in 1786 ready for a new quest and was urged by Jefferson to traverse Europe and Siberia to Kam-schatka, to cross in Russian vessels to Alaska, then a Russian possession, to go southward to the latitude of the Missouri River, from which point he was to travel eastward to the headwaters of that river and along its course through Louisiana to the United States. Ledyard attempted to carry out this program, but through interference from the Russian government his plans were thwarted.

Nothing daunted by the unhappy outcome of this attempt, Jefferson proposed to the American Philosophical Society that a subscription be made up from private sources to finance an expedition up the Missouri River from St. Louis to cross what Jefferson called the "stony mountains"<sup>1</sup> to some corresponding stream on their farther slope, the course of which was to be traced westward to the ocean. Caspar Wistar, getting wind of these plans, in June, 1792, tried to get his Philadelphia friend Dr. Moses Marshall to confer with Jefferson with the purpose in view of undertaking the task.<sup>2</sup> But Dr. Marshall having been appointed justice of the peace, was diverted permanently from botany (Harshberger). The leadership was proposed to André Michaux, who accepted the rather rigorous terms of the promoters of the enterprise. Jefferson, speaking for the Philosophical Society, gave Michaux his instructions which, did time permit, would make very interesting reading. Michaux reached Kentucky only to be recalled by the French government to carry out a program of exploration for which he had been previously employed by it.

A third attempt was soon planned, this time with government aid. In January, 1803, acting on a confidential message from Jefferson, Congress approved his recommendation that a sum deemed sufficient to carry out the project be appropriated, and Jefferson lost no time in appointing his old neighbor and private secretary, Captain Meriwether Lewis, to take charge of the expedition. After associating with himself William Clark of Kentucky, Lewis, in April, 1803, received the necessary credentials and instructions from President Jefferson covering all points of policy likely to arise. To prepare himself the better for his work Lewis spent some months in Philadelphia receiving instruction

<sup>1</sup> Mem. Ed., XVIII, 144.

<sup>2</sup> Darlington, "Memorials of John Bartram and Humphrey Marshall," p. 570.

in science from the eminent men residing there. Dr. Benjamin S. Barton chiefly took his tuition in botany in hand and consulted freely on those phases of the plan dealing with zoology and anthropology as well. The expedition, despite much fatigue and suffering, was carried out successfully and after about two years' absence returned with much material of great value to natural history. In accordance with the terms of the agreement with the government, Captain Lewis was to have charge of the working up of the material and was to retain the right to first publish the results. The collections seem to have been placed by Lewis in the hands of qualified investigators before he assumed the post as governor of the new Louisiana territory to which he was soon appointed. Not long after, while suffering from a mental illness, he is said to have committed suicide. The decease soon after of Dr. Benjamin S. Barton, who was in charge of much of the material, and the bankruptcy of the bookmaker who was to have published the results threatened even at this late date to frustrate the object of the entire undertaking. The story of the adventures of the herbarium material makes a tale to stir botanists. We shall get a part of it from letters quoted below.

The seeds collected by the expedition seem in a measure to have been taken in charge by Jefferson, who divided the major part of them into two portions, which were given to Bernard McMahon, a botanist and nurseryman living in Philadelphia and to William Hamilton of the same place, the wealthy owner of the famous gardens known as "The Woodlands," by whom they were successfully grown.

The history of a number of the plants grown from these seed is traced in the correspondence between Jefferson and McMahon. These letters show, moreover, that Jefferson was the one stable element in the chaotic situation that had come to pass, and in the end he more than any other one man was able to save and bring within reach of the public the results of this expedition. McMahon writes from

PHILADELPHIA, June 28, 1808.

*Dear Sir:* I am happy to inform you that I have fine plants of all the varieties of currants (7) and gooseberries (2) brought by Govr. Lewis, and of about 20 other new species of plants, as well as five or six new genera; This will add to natural history and the plants are forthcoming.

To this Jefferson replies (in part), from

WASHINGTON, July 6, 08.

. . . I received only a few of Govr. Lewis's articles and have here growing only his salsafia, mandane corn and a pea remarkable for its beautiful blossom and leaf, his forward bean is growing in my neighborhood.

On December 24, 1809, not long after the tragic death of Governor Lewis became known, McMahon writes from Philadelphia:

I am extremely sorry for the death of that worthy and valuable man, Govr. Lewis, and the more so, for the manner of it. I have, I believe, all his collection of dried specimens of plants, procured during his journey to the

Pacific Ocean, and several kinds of new living plants, which I raised from the seed of his collecting which you and himself were pleased to give me. In consequence of a hint to that effect, given me by Govr. Lewis on his leaving this City, I never yet parted with one of the plants raised from his seeds, nor with a single seed the produce of either of them, for fear they would make their way into the hands of any botanist, either in America or Europe who might rob Mr. Lewis of the right he had to first describe and name his discoveries, in his intended publication; and indeed, I had strong reasons to believe this opportunity was coveted by ——— ——— which made me still more careful of the plants.

On Governor Lewis's departure from here, for the seat of his government, he requested me to employ Mr. Frederick Pursh, on his return from a collecting excursion he was then about to undertake for Dr. Barton, to describe and make drawings of such of his collection as would appear to be new plants and that himself would return to Philadelphia in the month of May following. About the first of the ensuing November, Mr. Pursh returned, took up his abode with me, began the work, progressed as far as he could without further explanation in some cases, from Mr. Lewis, and was detained by me, on expectation of Mr. Lewis's arrival at my expense, without the least expectation of any future remuneration, from that time till April last; when not having received any reply to several letters I had written from time to time, to Govr. Lewis on the subject, not being able to obtain any information when he might be expected here, I thought it a folly to keep Pursh longer idle, and recommended him as gardener to Dr. Hosack of New York, with whom he has since lived. The original specimens are all in my hands, but Mr. Pursh had taken his drawings and descriptions with him, and will, no doubt, on the delivery of them expect a reasonable compensation for his trouble. As it appears to me probable that you will interest yourself in having the discoveries of Mr. Lewis published, I think it a duty incumbent on me to give you (*the Ms. is here torn*) preceding information, and to ask your advice as to the propriety of still keeping the living plants I have from getting into other hands who would gladly describe and publish them without doing due honor to the memory and merit of the worthy discoverer. I am, sir, with the most sincere esteem, your well wisher, etc.

BERND. McMAHON

It is not necessary to philosophize on the sad state of those times when botanists were jealous of each other's new species. The part played by McMahon, the gardener, seedsman and botanist, as a sort of central, connecting Lewis, the collector, Pursh, the botanist, and Jefferson, the prime mover in the whole enterprise is clearly indicated.

Not to tarry longer, it may be said that from the seeds placed with McMahon and Hamilton for propagation at the hands of expert gardeners came several plants well known to us all. The osage orange, or bois d'arc (*Maclura pomifera* Schneider) in time came into very general use in the central and southern parts of the country as a hedge plant. Others are mentioned in subsequent letters.

On February 18, 1812, McMahon sent to Jefferson among other of Lewis's plants, (1) "*Ribes odoratissimum* (Mihi), an important shrub, the fruit very large, of a dark purple colour, the flowers yellow, showy and *extremely fragrant*"; (2) *Symporicarpos leucocarpa* (Mihi), which he described and to which he gives the English name of Snowberry bush, which it still retains; (3) "The yellow currant of the

River Jefferson, that is specifically different from the other, but I have not given it a specific botanical name." He closes his letter by referring to another subject which is quoted as showing his attitude toward Jefferson in a botanical matter.

I would thank you to inform me whether you take the Gloucester nut to be a distinct species as announced by Michaux f. (*Juglans laciniosa*) or whether if only a variety it is nearer allied to the *Juglans tomentosa* Mich. or to the *J. squamosa* Mich. f., the *J. alba* of his father.

But I must not quote more of this interesting correspondence.

In time, through the help of Abbé Corrêa de Serra and others, Jefferson was able to rescue a considerable part of the notes of the Lewis and Clark expedition from their various hiding places and to get them into the hands of a publisher, Paul Allen, for whom he wrote a brief biographical sketch of Meriwether Lewis.

Speaking summarily of Jefferson's relation to the Lewis and Clark expedition, it is clear that Jefferson inspired and sustained this famous enterprise, determined its course and in the end, outliving all others who had had a scientific interest in the enterprise, secured the benefits of its results to the country. Viewed broadly, this expedition was perhaps Jefferson's greatest contribution to science in general and to botany in particular.

During the years of retirement at Monticello, he took an interest in whatever was happening in the world of ideas. His correspondence with botanists at that period touches on all phases of the science then developing. The old artificial system of classification proposed by Linnæus had proved a great blessing when it was formulated, but as the study of life became more thorough and comprehensive, it is not surprising that new standpoints should have developed and that some system of arrangement should have been sought that in a certain ideal way would express more fully the truths of affinity and relationship than did the Linnæan system. Hence, it came about that the so-called "Natural System" associated with the name of Laurent de Jussieu formulated in his "Genera Plantarum" attracted much attention in the scientific world in 1789. In those days ideas were propagated rather slowly from their point of origin and it was not till nearly twenty-five years later that the reign of the Linnæan system was challenged in America. In 1815, the Abbé Corrêa de Serra, then lecturing on botany in the College of Philadelphia in succession to Benj. S. Barton, reduced Mühlenberg's "Catalogue" to the Natural System for the use of his hearers. Jefferson, in his retirement, was not entirely outside of the reach of ensuing botanical controversy. Since his opinion seems to have been solicited by numerous correspondents on many subjects of disagreement, we are not surprised to find Dr. John Manners subjecting the aged ex-president to a catechetical examination on the articles of his taxonomic faith. On January 24, 1814, Dr. Manners desires to know the comparative merits of the different methods of classifica-

tion adopted by different writers on Natural History. In his rather complete reply to the doctor written from Monticello, February 22, 1814, Jefferson approaches the problem in its broadest possible aspect. I quote here only in part.

. . . The text of this answer will be found in an observation in your letter, when, speaking of the nosological systems, you say that disease has been found to be an unit. Nature, has, in truth, produced units only through all her works. Classes, orders, genera, species are not of her work. Her creation is of individuals. No two animals are exactly alike; no two plants, nor even two leaves or blades of grass; no two crystallizations. . . . This infinitude of units or individuals are far beyond the capacity of our memory. We are obliged, in aid of that, to distribute them into masses, throwing into each of these all individuals which have a certain degree of resemblance; to subdivide these again into smaller groups, according to certain points of dissimilitude observable in them, and so on until we have formed what we call a series of classes, orders, genera and species. In doing this we arbitrarily fix on such characteristic resemblances and differences as seem to us most prominent and invariable in the several subjects, and most likely to take a strong hold in our memories. Thus Ray formed one classification on such lines of division as struck him most favorable; Klein adopted another; Brisson a third, and other naturalists other designations, till Linnæus appeared. Fortunately for science, he conceived in the three kingdoms of nature, modes of classification which obtained the approbation of the learned of all nations. His system was accordingly adopted by all, and united all in a general language. . . . This classification was indeed liable to the imperfection of bringing into the same group individuals which, though resembling in the characteristics adopted by the author for his classification, yet have strong marks of dissimilitude in other respects. But to this objection every mode of classification must be liable. . . . Nature has not arranged her productions on a single and direct line. They branch at every step, and in every direction, and he who attempts to reduce them into departments, is left to do it by the lines of his own fancy. . . . But neither is this so important a consideration as that of uniting all nations under one language in Natural History. . . . Linnæus' method was received, understood and conventionally settled among the learned, and was even getting into common use. To disturb it then was unfortunate. The new system attempted in botany by Jussieu . . . is subject to the same regret. . . . I adhere to the Linnæan (system) because it is sufficient as a ground-work, admits of supplementary insertions as new productions are discovered, and mainly because it has got into so general use that it will not be easy to displace it, and still less to find another which shall have the same singular fortune of obtaining the general consent. . . . I am not myself apt to be alarmed at innovations recommended by reason. That dread belongs to those whose interests or prejudices shrink from the advance of truth and science. My reluctance is to give up an universal language of which we are in possession, without an insurance of general consent to receive another.

There would seem to be little encouragement here for a bibliographic botanist with his new combinations and resurrected ghost species; and as little for the man who regards a proposed new species as a piece of property belonging to him by moral right. The greatest service to the greatest number was the test to which Jefferson brought all things.

We must now pass to the consideration of another phase of Jefferson's influence on botany, that exerted in the academic sphere. And

we are not surprised to learn that largely as a result of Jefferson's initiative, the State of Virginia in 1818 appropriated the sum of \$15,000 to be devoted to the building, equipment and manning of a State University. Likewise, largely through the influence of Jefferson, it came eventually to be located at Charlottesville. In spite of his many years, Jefferson was chosen head of the institution. In calling him to be rector of the university, the authorities could have hardly known how well they had chosen. Jefferson, already beyond his three score and ten, now turned architect and planned and caused to be built those structures which have made the University of Virginia one of the famous shrines of the building art in America. Then came the filling of eight professorships, chiefly by men from abroad. That of Natural History was filled on March 4, 1825, by the appointment of Dr. John Patten Emmett of New York, who was called to occupy, not a chair, but as somebody else has said, "a bench," for he gave instruction in chemistry, botany, zoology, mineralogy, and geology. Being himself a chemist one is not surprised to find him in the following year pleading with the rector for a laboratory room for his chemistry work. It seems likely that he found it hard to get time for the botany since Jefferson seems to have been compelled to write him a letter asking him to plan on getting his botany courses into operation.

This letter shows the same energy, foresight, and sense for the practicable that put through the exploration of Louisiana. It is full of the enthusiasm for botany that he looked for in his young professor, but what is more to our present purpose, it gives a clear idea of what was taught under the name of botany in those days, and what equipment was regarded as necessary. On April 27, 1826, he wrote to Dr. Emmett as follows:

*Dear Sir:* It is time to think of the introduction of the School of Botany into our Institution. Not that I suppose the lectures can be begun in the present year, but that we may this year make the preparations necessary for commencing them the next, for that branch, I presume, can be taught advantageously only during the short season while Nature is in general bloom, say, only during a certain portion of the months of April and May, when suspending the other branches of your department, that of Botany may claim your exclusive attention. Of this, however, you are to be the judge, as well as of what I may now propose on the subject of preparation.

He then refers to suggestions made at his request by the late Abbé Corrêa regarding the most advisable way of utilizing a plot of 6 acres of ground available for a botanic garden. The lower flatter stretches were best used for the garden of plants, the terraced hill slopes for the arboretum. Owing to lack of funds a greenhouse was not to be considered. This area was to be enclosed and a gardener of sufficient skill was to be engaged. He then continues:

Make out a list of the plants thought necessary and sufficient for botanical purposes, and of the trees we propose to introduce and take measures in time for procuring them. As to the seeds of plants, much may be obtained from the gardeners of our own country. I have, moreover, a special resource. For

three and twenty years of the past twenty-five, my good friend Thouin, Superintendent of the Garden of Plants at Paris, has regularly sent me a box of seeds, of such exotics as to us, as would suit our climate, and containing nothing indigenous to our country. These I regularly sent to the public and private gardens of the other states, having as yet no employment for them here. But during the last two years this envoi has been intermittent, I know not why. I will immediately write and request a recommencement of that kind office, on the ground that we can now employ them ourselves. They can be here in the early spring. The trees I should propose would be exotics of distinguished usefulness, and accommodated to our climate. Such as the Larch, Cedar of Libanus, cork-oak, the Marronier (Spanish Chestnut), Mahogany<sup>1</sup>, the catachu or Indian rubber tree of Napul (30°), Teak tree or Indian oak of Burman (23°) the various woods of Brazil, etc. The seed of the Larch can be obtained from a tree at Monticello, cones of the cedar of Libanus are in most of our seedshops, or may be had fresh from the trees in English gardens. The Marronier and cork-oak, I can obtain from France. There is a Marronier at Mount Vernon, but it is a seedling, and not therefore select. The others may be got through the means of our Ministers and Consuls in the countries where they grow, or from the seed shops of England where they may very possibly be found.

He closes his letter with a characteristic clause, "but let us at once enter on the operations."

On May 2, about eight weeks before his death, he being then 83 years old, Jefferson explains in a long letter to Professor Emmett, who finds his time overloaded, how he can reduce his difficulties by careful planning.

Suppose then you give 12 doz. lectures a year: say 2 doz. to botany and zoology, 2 doz. to mineralogy and geology, and 2 doz. to chemistry, or I should think that mineralogy, geology and chemistry might be advantageously blended in the same course, then your year would be formed into two grand divisions, 1/3 to botany and zoology and 2/3 to chemistry and its associates, mineralogy and geology. You will say that 2/3 of a year, or any better estimated partition of it, can give but an inadequate knowledge of the whole science of chemistry, but consider that we do not expect our schools to turn out their alumni already enthroned on the pinnacles of their respective sciences, but only so far advanced in each as to be able to pursue them by themselves and to become Newtons and Leplaces by energies and perseverences to be continued through life.

In his day Jefferson was the recipient of many distinguished honors conferred by societies and universities in America and Europe. Well did DeKay, the naturalist, refer to him in his late years as "the Great Patriarch of American Natural History." His own estimate of his life's work is reflected in the epitaph beneath which he desired to rest:

Here was buried Thomas Jefferson author of the Declaration of Independence, of the statute of Virginia for religious freedom and father of the University of Virginia.

---

For the use of the portrait of Jefferson which illustrates this paper the writer is indebted to Mrs. Edwin Kirk, of Washington, D. C., a descendant of Jefferson. The engraving was made from an oil painting by Gilbert Stuart and is traditionally regarded by members of this branch of the family as one of the best portraits of their great ancestor.